Claims

1. A method for the manufacture of at least one sorbent having at least two different groups, which are capable of binding, for the selective binding of a substrate, characterized in that it comprises the steps (i) to (ii):

   (i) determining at least two groups capable of binding a sorbent from a synthetic or natural first substrate,

   (ii) respectivly applying at least two different groups capable of binding a second synthetic or natural substrate to one respective carrier, thereby forming at least one sorbent, whereby the groups are the same groups of step (i) or are groups that are complementary thereto, and the second substrate of step (ii) is the same or different from the first substrate according to step (i),

   and whereby the groups are determined such that the contributions of the Gibbs energies of the individual groups to the non-covalent bond with the second substrate yield a negative value of the Gibbs energy ΔG, such that a binding strengthening occurs that results in an improved separation selectivity with respect to at least one substance to be separated off.

2. A method for the selectively binding of a substrate having at least two different groups, which are capable of binding, to at least one sorbent, characterized in that it comprises the steps (i) to (iv):

   (i) determining at least two groups capable of binding a sorbent from a synthetic or natural first substrate,

   (ii) respectively applying at least two different groups capable of binding a second synthetic or natural substrate to one respective carrier, thereby forming at least one sorbent, whereby the groups are the same groups of step (i) or are groups that are complementary thereto, and the second substrate of step (ii) is the same or different from the first substrate according to step (i),

   (iii) contacting the at least one second substrate that is the same or different from the first substrate according to (i) with at least one sorbent of step (ii),

(iv) testing the binding strength of the at least one second substrate to the at least one sorbent of step (iii),

and whereby the groups are determined such that the contributions of the Gibbs energies of the individual groups to the non-covalent bond with the second substrate yield a negative value of the Gibbs energy ΔG, such that a binding strengthening occurs that results in an improved separation selectivity with respect to at least one substance to be separated off.

3. A method according to claim 1 or 2, characterized in that the determination in step (i) comprises the dissection of a synthetic or natural first substrate into at least two components having at least two groups capable of binding a sorbent.

4. A method according to any one of claims 1 to 3, characterized in that one component has at least two different groups capable of binding.

5. A method according to any one of the preceding claims, characterized in that the at least one first substrate is the same as the at least one second substrate, and the at least two different groups capable of binding the second substrate, respectively, are selected among those groups that are complementary to the groups which are determined in step (i).

6. A method according to any one of claims 1 to 4, characterized in that the at least one first substrate is different from the at least one second substrate, and the at least two different groups capable of binding the second substrate, respectively, are selected among those groups that are complementary to the groups which are determined in step (i).

7. A method according to any one of claims 1 to 4, characterized in that the at least two groups capable of binding the at least one second substrate are selected among the groups that are determined according to step (i).

8. A method according to any one of the preceding claims, characterized in that the selection of at least two groups capable of binding a sorbent from a synthetic or a natural first substrate in step (i) yields two components each having at least one group capable of

binding the sorbent, and in step (ii) one sorbent is obtained; or the selection of at least two groups capable of binding a sorbent from a synthetic or natural first substrate in step (i) yields three components each having at least one group capable of binding the sorbent, and in step (ii) at least three sorbents are obtained; or the selection of at least two groups capable of binding a sorbent from a synthetic or natural first substrate in step (i) yields four components each having at least one group capable of binding the sorbent, and in step (ii) at least six sorbents are obtained.

9. A method according to any one of the preceding claims, characterized in that the at least two different groups capable of binding of the at least one sorbent are selected among groups which are part of amino acids, sugars, nucleotides, nucleosides, pyrimidine bases and purine bases.

10. A method according to any one of the preceding claims, characterized in that the at least two different groups capable of binding of the at least one second substrate are selected among groups which are part of amino acids, sugars, nucleotides, nucleosides, pyrimidine bases and purine bases.

11. A method according to any one of the preceding claims, characterized in that the at least two different groups in step (ii), respectively, are covalently bonded to a polymer.

12. A method according to claim 11, characterized in that the polymer is directly synthesized on the carrier by means of polymerization or polycondensation of at least one monomer having at least two different groups capable of binding, or of at least two monomers each having at least one group capable of binding, whereby said groups are different.

13. A method according to any one of claims 1 to 10, characterized in that in step (ii) the at least two different groups capable of binding a second substrate are applied onto a carrier via a reagent which is selected from the group comprising activating reagents, silanization reagents and spacer, or mixtures of two or more of said reagents.

14. A method according to claim 13, characterized in that in step (ii) the at least two different groups capable of binding a second substrate are selected from the group consisting of phenyl, hydroxyphenyl, carboxyl, amine, amide, hydroxyl, indole, imidazole and guanidine residue.

15. A method according to any one of the preceding claims, characterized in that it additionally comprises the step (v):

(v) isolating the at least one second substrate.

16. A method according to any one of the preceding claims, characterized in that it additionally comprises the step (vi):

(vi) characterizing and identifying the at least one second substrate.

17. A method according to any one of the preceding claims, characterized in that the substrate comprises one or more natural agents selected from the group comprising amino acids, oligopeptides, nucleotides, proteins, glycoproteins, antigens, antibodies, carbohydrates, enzymes, co-enzymes, hormones, alkaloids, steroids, viruses, microorganisms, substances contained in vegetable and animal tissue, cells, cell fragments, cell compartments, cell disruptions, lectins, flavylium compounds, flavones, and isoflavones, or one or more synthetic agents selected from the group of substances having influence on the nervous system, having influence on the hormone system, having influence on mediators, having influence on the cardio-vascular system, having influence on the respiratory tract, having influence on the gastrointestinal tract, having influence on the kidney and the lower urinary tract, having influence on the eye, having influence on the skin, substances for the prophylaxis and therapy of infection diseases, having influence on malignant tumors, having influence on the immune system and substances having immunological influence, as well as insecticides, herbicides, pesticides and fungicides.

18. A combinatorial library comprising a collection of sorbents having at least two different first groups, respectively, that are capable of non-covalently binding at least one substrate having at least two different second groups, whereby the at least two different first groups are selected such that the contributions of the Gibbs energies of the individual first groups to the non-covalent bond with the at least two different second groups yield a total of a negative value of the Gibbs energy ΔG, such that a binding strengthening occurs which results in an improved separation selectivity with respect to at least one substance to be separated off.

19. A combinatorial library according to claim 18, characterized in that the at least two different groups of the sorbents and the at least two different groups of the at least one substrate are selected among groups which are part of amino acids, sugars, nucleotides, nucleosides, pyrimidine bases and purine bases.

20. A sorbent/substrate complex comprising at least one sorbent and at least one substrate, having at least two different second groups, whereby said sorbent has at least two different first groups capable of non-covalently binding the at least one substrate having the at least two different second groups, whereby the at least two first groups are selected such that the contributions of the Gibbs energies of the individual first groups to the non-covalent bond with the at least two different second groups yield a total of a negative value of the Gibbs energy ΔG, such that a binding strengthening occurs which results in an improved separation selectivity with respect to at least one substance to be separated off.

21. A use of a method according to any one of claims 2 to 17, or a use of a combinatorial library according to any one of claims 18 to 20 for the detection of receptor/agent interactions, for the screening of agents, for the development of lead substances, for separating off substrates, for the purification of substrates, for the separation of isomeric

compounds, for the purification of liquids by separating off harmfull substances, for the depletion of dynamically combinatorial libraries.